OWNERS MANUAL

THESIS
FOR THE THESIS

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(according to DHV 26th January 2005)

(1) GENERAL DATA

INTRODUCTION

Congratulations, you are now a proud owner of a state-of-the-art glider. We are pleased to welcome you among the number of discerning PRO-DESIGN pilots. Extensive development work using the most modern methods and thorough tests make the THESIS a user-friendly and safe paraglider without neglecting performance and fun of flying. To facilitate more speed the THESIS is equipped with a special Speed-System. For flying more comfortably we recommend the use of a harness out of the current PRO-DESIGN range. Of course, you can fly the THESIS with other kinds of certified paragliding harnesses as well. But in such cases take notice of the suitability (see chapter Technical Information).

Please read this manual carefully before flying your THESIS. Besides the choice of optimum equipment, paragliding demands caution, sense of judgment and theoretical knowledge, which you can only acquire and develop in recognized paragliding training programs. Paragliding can be a dangerous sport and lead to injury, disability or death. Do not fly in strong turbulence and winds as these could cause uncontrolled and critical flying situations and lead to crashes. If you have any doubts about weather, wind or terrain, do not launch!

During production and before delivery we check each paraglider precisely and your dealer test flies it too. A note on the technical data label on the glider as well as the filled test flight certificate in this manual confirm this. Make sure your canopy was test flown before your first launch, otherwise please contact your dealer!

If you still have any questions when reading this manual, call us, we'll be pleased to help you.

We wish you many pleasant flights on your THESIS!

PRO-DESIGN

TECHNICAL INFORMATION

The THESIS has been developed for self-launching, but not for tandem flying. The THESIS has been tested by the DHV (German Hanggliding Association) and has successfully passed all load- and flight tests. The test results confirm that in a broad field of normal and abnormal flying conditions the THESIS proves to be stable and airworthy. Please do always consider the fact that in turbulent conditions any paraglider can tuck partly or completely. So never fly in these conditions!

CAUTION! - The Speed-System provides more speed by reduction of the angle of attack. Therefore the canopy tucks more easily. Do not fly accelerated near the ground but ensure that you have a good safety margin of altitude when using the system!

The use of harnesses: Only use certified harnesses with DHV category GH! In case of uncertainty please contact PRO-DESIGN.

TRIMMING AND ADJUSTMENTS

Factory standard line adjustment allows a trim speed of approximately 37 km/h (depending on the pilot's weight and mainly on your speedometer). The adjustment of the brake lines is correct if the lines come tight when the brake handles are pulled down approx. 10 cm from the block. In this state of tuning the THESIS has been tested by the DHV. In extreme situations other tunings could cause different reactions of the paraglider. Always keep the brake handles in your hands so you can react at any moment to changing conditions (possibly you may take even both handles in one hand). If you fly the THESIS with a PRO-DESIGN harness you should keep the adjustment of the brake lines unchanged. In case you fly with another harness refit the brake handles if necessary by adjusting the line length accordingly.
CAUTION! - If you have any doubts concerning the brake lines it is best to adjust them rather too long since you can always shorten them by winding the line around your wrist.

SAFETY SYSTEM

It is a matter of course, that an optimum equipment is essential for every paraglider pilot. You should always wear high ankle support boots, helmet and gloves. Pay attention to warm clothing (even in summer it can get very cold at high altitudes). In case of extreme atmosphere conditions, mid-air collision or any material damage, a reserve system can safe your life. We strongly recommend to fly with a reserve system under all circumstances!

ATTENTION! - In case of uncertainty whether you should fly or not, never take any risk simply because you fly with a safety system (i.e. do not take off!). No safety system can guarantee 100% protection under all conditions. At worst, releasing the safety system can cause entanglement of the lines or other complications, possibly both systems could fail by inappropriate interaction.

(2) FLYING PRECAUTIONS AND CONTROLS

PRE-FLIGHT CHECKLIST

1. Check the canopy for tears or damage, especially the seams, where the ribs join the upper and lower wing surface. Check the line- and brake line connections as well.
2. Check the lines for damage, especially the condition of the stitching. It is important to check the lines and brake lines to clear entanglements. The line lengths should be rechecked after every 25 hours of airtime or if anything unusual should occur in the reactions of your THESIS.
3. Check the risers and rapid links for perfect condition.
4. Check the knots which connect the brake handles with the brake lines. They brake lines must not get caught anywhere.
5. Check your harness for wear or other damages. In case of a hard landing, check your harness outside as well as inside carefully, especially the seams and webbing's.
6. Check if the reserve system is correctly attached or integrated to the harness. Check the proper operation of the releasing mechanism.
7. Check the carabiners. They must be hooked in correctly and locked before take off!

LAUNCH

Use only suitable launch sites which allow a safe abort if necessary. After the thorough pre-flight check of the canopy according to the check list above, position your THESIS in an arch layout and make sure, that all the cells are open. In case of a stronger wind we recommend not to unfold too much, so you are not overpowered during inflation.

- forward launch

To be carried out under all wind conditions except strong winds. Inflate the canopy by pulling on the A-risers, keeping B-, C- and D-risers in the arm bow, pull up the canopy dynamically.

CAUTION! - On the A-risers there are additional lines mounted which are connected to the outermost A-lines. When grabbing the A-risers, take these lines into your hands too in order to avoid possible entanglements (further comments please see chapter Big Earing).

The stronger the wind the less of a run you will need to launch. As soon as the canopy is above you, let go off the A-risers. Now a quick visual inspection of the canopy is very important to check if it has inflated properly, otherwise do not launch (abort and try again!).Then run for a perfect take off. In case of light wind you will take off more easily if you slightly pull the brake lines. After take off let go brake lines again to reach full flying speed.

- reverse launch

This is the method for stronger winds. Please note, that in strong wind conditions you may need an experienced person to assist and that you can easily lose control in a gust. If you feel, that the wind is too strong, pull one or both brake lines to decrease the pressure on the canopy; or pull on the back risers to avoid drag back.

FLIGHT

Basic advice: Always fly at safe altitude! The THESIS has its best glide ratio with brakes up. Minimum sink rate is achieved with brakes slightly pulled. In turbulence you can prevent tucks by braking slightly. Forward pendulum movements of the canopy can be countered by braking, backward pendulum by letting the brakes go.

FLIGHT WITH SPEED-SYSTEM

The THESIS Speed-System consists of:
a) adjustable 4-riser-system
b) pulleys (do not come with the glider; they are part of the PRO-DESIGN harness)
c) foot stirrup

Adjust the Speed-System that you reach full acceleration with straight legs. Never use the Speed-System in turbulent air or near the ground, because reduction of the angle of attack decreases the stability of the canopy despite its higher speed.

ATTENTION! - At any disturbances of the canopy (any kind of tucks) the Speed-System has to be released immediately (releasing the stirrup) so that the canopy can recover properly.

The THESIS Speed-System accelerates for approx. 8-10 km/h at full range. The system shortens the A-risers relative to the B-risers which adds speed at the cost of stability. Due to the mechanic of the Speed-System the A-riser reduction is concentrated near full range, allowing the pilot to carefully adjust the speed versus stability in this area a lot.

MAKING TURNS

Pull down brake on the side towards which you want to turn. To reduce sinkrate, also pull outside brake slightly.
You can also make turns by weight shifting in your harness. The looser the chest strap (cross-braces) of your harness the more effective is of your weight shifting.

BEWARE! - In extreme situations (e.g. strong and large asymmetric tucks) a too loose setting of the chest strap could delay reinflation of the canopy. You have best setting if the distance between carabiners is not more than 35cm.

An optimum technique for making turns is the combination of pulling the brake lines and weight-shifting. An emergency method for making turns (e.g. damaged brake lines) is by either pulling one A-riser slightly (beware of tucks) or pulling on a back riser (beware of stall). We recommend not to use these methods under normal conditions.

LANDINGS

Whenever possible walk your landing field first to assess hazards and wind! Plan for landing with sufficient height! That way you avoid stress situations and have time to check wind direction and watch other gliders approaching. The final approach should always be against the wind and with open brakes to keep the paraglider steerable. In case of turbulence you should fly with slightly pulled brakes to avoid tucks. To land feet first, move to an upright position in your harness in time (latest 5 m above ground) for the final approach, otherwise you could land on your back and get hurt. Approx. 2 m before touching the ground, pull both brakes totally to reduce speed for a soft landing. In case of head wind you need not pull the brakes very much for a soft landing (top landing especially). If there is no wind or wind from the back you have to pull the brakes more strongly.

ATTENTION! - If you pull too much on the brakes at an too high altitude your glider could stall and cause you to fall backwards (especially with strong head wind)!

In case of strong winds on the ground, take wind and pressure out of the canopy by pulling in the brake lines totally or pulling on both back risers. Never use the Speed-System when landing!

TOW LAUNCHING/ MOTORIZED FLIGHT

The THESIS is suitable for tow launching and flight with rucksack motor. Please make sure about the particular law situations in your country!

ATTENTION! - The THESIS is not suitable for skydiving!

(3) CRITICAL FLYING SITUATIONS

In this section we describe flying situations which you may cause either intentionally (for training) or which are caused by piloting error or turbulence. Every pilot who flies in turbulence once will be confronted with these flying situations. So prepare yourself and ask your paragliding school for instruction. Special safety-courses above water are available. Acquainting yourself with critical flight situations increases your safety considerably. Enough altitude and a safety system are imperative!
ATTENTION! - All described critical flying situations are dangerous when exercised without adequate knowledge and sufficient altitude above the ground. The description of the maneuvers is according to the DHV. You cannot expect any paraglider to always behave according to the DHV rating. Even little differences in pilot input and different weather conditions can lead to a much worser behavior of the paraglider and even result in a crash. Do not forget, that all disturbances of the canopy result in increased sinkrate.
Aerobatics are not allowed!

Critical flying situations are:
- side collaps
- front collaps
- central tuck
- stall with brakes
- B-line stall
- stall with C/D-rises
- full stall
- spin / negative spin

(4) MEANS TO DESCEND AND RATES OF DESCENT

Basic advice: Before you try to descend always fly away from the thermal or area of lift! F.e. it makes absolutely no sense to ‘fight’ 15 m/s lift with 15 m/s sink rate (which many pilots will not even reach)!

- BIG EARING
Without or with the use of the Speed-System.
Sinking 3-7 m/sec - recommended and best option!
You can fully steer with only weight shifting in your harness (with loose cross braces)! There are additional lines mounted to the A-risers to easily exercise this maneuver (see chapter Big Earing before).
CAUTION! - By pulling in the ears too much (without using the Speed-System) there is danger of Deep Stall! In case you want to use the Speed-System in addition, please pull in the ears first and then push the Speed bar. Never opposite!

- SPIRAL DIVE
Allows fast descent without stalling or collapsing the wing.
Sinking from 5 to more than 15 m/sec.
Disadvantages: The pilot may suffer high G-loads and become dizzy. The maneuver only allows the pilot to descend vertically, with no horizontal movement. Altitude is required to enter and exit the maneuver.
Enter the spiral dive by pulling down one brake line slowly. The glider is capable of entering a tight turn without the tendency of stalling the inside wing. When doing fast spirals, release the inside brake because very little is necessary to maintain the turn. It is also recommended to keep the opposite brake pulled slightly to control speed and allow quicker recovery from the spiral. Recovery is usually made by slowly releasing the inside brake.

CAUTION! - The THESIS is a dynamic paraglider and it is very easy to reach high speeds, lose altitude quickly and put high physical strains on the pilot. Exit the spiral dive with sufficient altitude! Attempting fast recovery could cause the pilot to a forward pendulum, resulting in a quick climb and stall, which could lead to a forward surge of the canopy and a big collapse! When descending in a spiral faster than 14 m/sec a stable rotation may occur. This means that with no brake input the glider will continue to spiral. This tendency is strongly dependent on the harness settings (tight or loose chest strap and cross brace settings) and on the weight shifting. If you shift your weight into the turn, the glider continues to spiral. To stop rotation, pull the opposite brake, but be careful not to exit too quickly.
BASIC ADVICE! - Never exercise the Spiral Dive in low altitudes. High sink rate can easily be underestimated!

- B-LINE STALL
Sinking 5-10 m/sec.
IMPORTANT! - Stop in time and at appropriate altitude for a total recovery from stall, if necessary with active pilot input! Not as uncritical as often described! (See chapter B-Riser Stall before).

(5) MAINTENANCE AND REPAIRS

Repairs are best made by PRO-DESIGN or an appropriate agent. Tears have to be stitched with expertise. Sticky back cloth can only fix small tears.
Keep your paraglider dry and store indoors. Protect your paraglider from humidity and sun. UV-rays lead to loss of strength and damage the fabric. Dry a humid or wet paraglider on a shady place in fresh air.
CAUTION! - Above all, the worst you can harm your glider is to store it humid or wet. Humidity (especially when packed airtight) starts a chemical reaction which weakens the connection between the Nylon fabric and the coating. In consequence the cloth gets soft and delamination of the coating occurs, i.e. the fabrics gets to much porous in a very short time! If you take care of this matter, your glider will have a considerable higher lifespan.

Do not expose your paraglider to a temperature of more than 50 degrees Celsius (car!). Such high temperatures could soften the lines and as a consequence they could shrink and/or lose their strength. This can be checked by remeasuring and load test only!
It is important to protect your paraglider at all times, particularly during ground handling when most damage could occur. Never allow the paraglider, particularly in high winds, to bang down onto the leading edge.

We recommend that you have your THESIS checked every year, at least after every 100 flights (no matter how long you have had your wing) and sent to PRO-DESIGN or to an appropriate agent. The line lengths must be remeasured after every 25 hours of airtime or whenever the reactions of your paraglider seem strange. For this, please contact your dealer or PRO-DESIGN.

CAUTION! The main bottom lines (cover in polyester, core in HMA-Aramides) need a periodical check for proper braking strengh and/or need to be replaced. Aramides have a fast aging behaviour and are sensitive to pressure and bending. A proper check and evaluation work can only be done by an appropriate dealer, workshop or directly at PRO-DESIGN.

Clean the canopy with warm water only or soft soap water. Do not use solvents or detergents!

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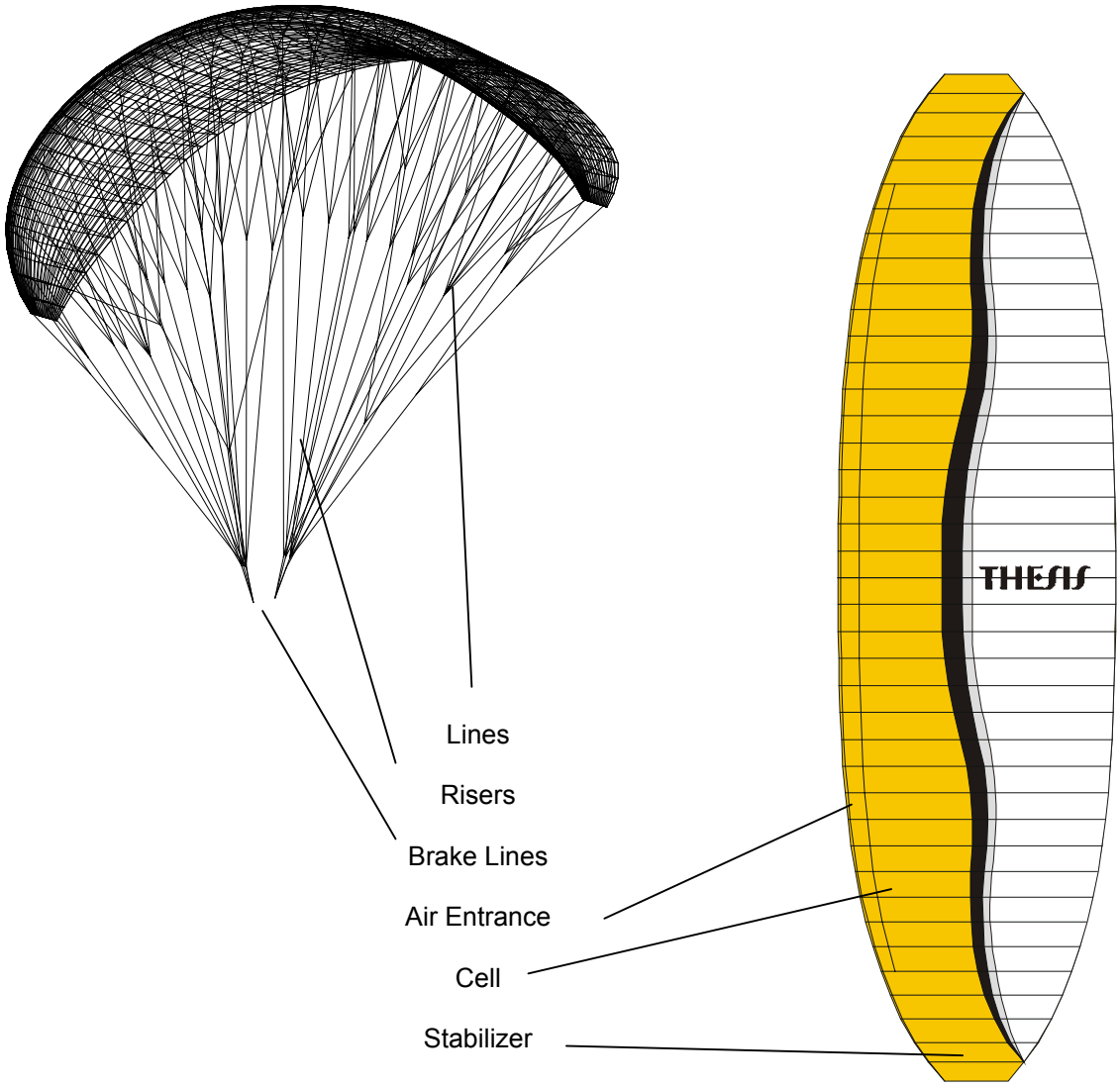
THESIS
… the new synthesis!

(6) DRAWING/TECHNICAL DATA



THESIS	60	80	100
Area projected	22,26m²	24,16m²	26,13m²
Area layout	25,67m²	27,85m²	30,13m²
Span projected	8,64m	9m	9,36m
Span layout	10,75m	11,2m	11,65m
Max.chord	2,90m	3,02m	3,14m
Aspect ratio projected	3,35	3,35	3,35
Aspect ratio layout	4,5	4,5	4,5
No. of cells	40	40	40
Weight	5,2kg	5,5kg	5,9kg
Min./max. total load	60-85kg	80-105kg	100-125kg
Min./trim speed	22-37km/h	22-37km/h	22-37km/h
Max. speed with Speed-System	46km/h	46km/h	46km/h
Certification	DHV 1	DHV 1	DHV 1

(7) THE THESIS SPEED-SYSTEM

INSTRUCTIONS FOR INSTALLATION

Install the stirrup onto your harness:
a) Mount guidance gears/pulleys to your harness (PRO-DESIGN harnesses have mounted guidance gears already, left and right of the seat plate).
b) Lines of the stirrup to be guided through the pulleys.
c) For launching first hook in the risers to the carabiners and second attach the small hooks to each other - the hooks from the lines of the stirrup to the hooks of the Speed-System.
d) Check the Speed-System for free running.

NOTE! - Before you install the Speed-System to another harness, please contact PRO-DESIGN or your agent.

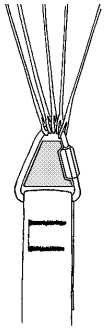
Follow our comments we give in chapter FLYING PRECAUTIONS AND CONTROLS! In case you have any doubts, contact PRO-DESIGN or your dealer.

THESIS SPEED-SYSTEM

- block and tackle
- attach with Speed-Hook

- guidance gear pulley
- adjustable stirrup

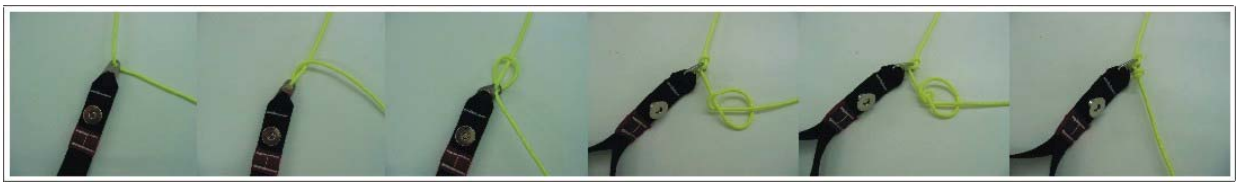
(8) APPENDIX



NOTES

Special and precisely fitting plastics in the quick links prevent them from getting crosswise and self-opening. In case of entanglement or exchange of lines, they can be removed and reinstalled easily.

For a permanent connection of the brake line to the brake handle please use the right knot. See the drawings for instructions. The standard adjustment of the brake lines shows the mark at the grommet. From the mark to the end of the line = 25cm.



1) 2) 3) 4) 5) 6)

USABILITY

The THESIS is a Basic-Intermediate glider with easy handling, high stability and excellent performance in its class. The THESIS is also made for pilots who are not flying permanently, perfect for school-use and entry level pilots. The attractive flight behaviour and the good performance will also please safety-orientated advanced pilots and pilots who fly more frequently.

TESTFLIGHT CERTIFICATE

Type: THESIS .....

Serial number: .....

Test flown by: .....

Date: .....

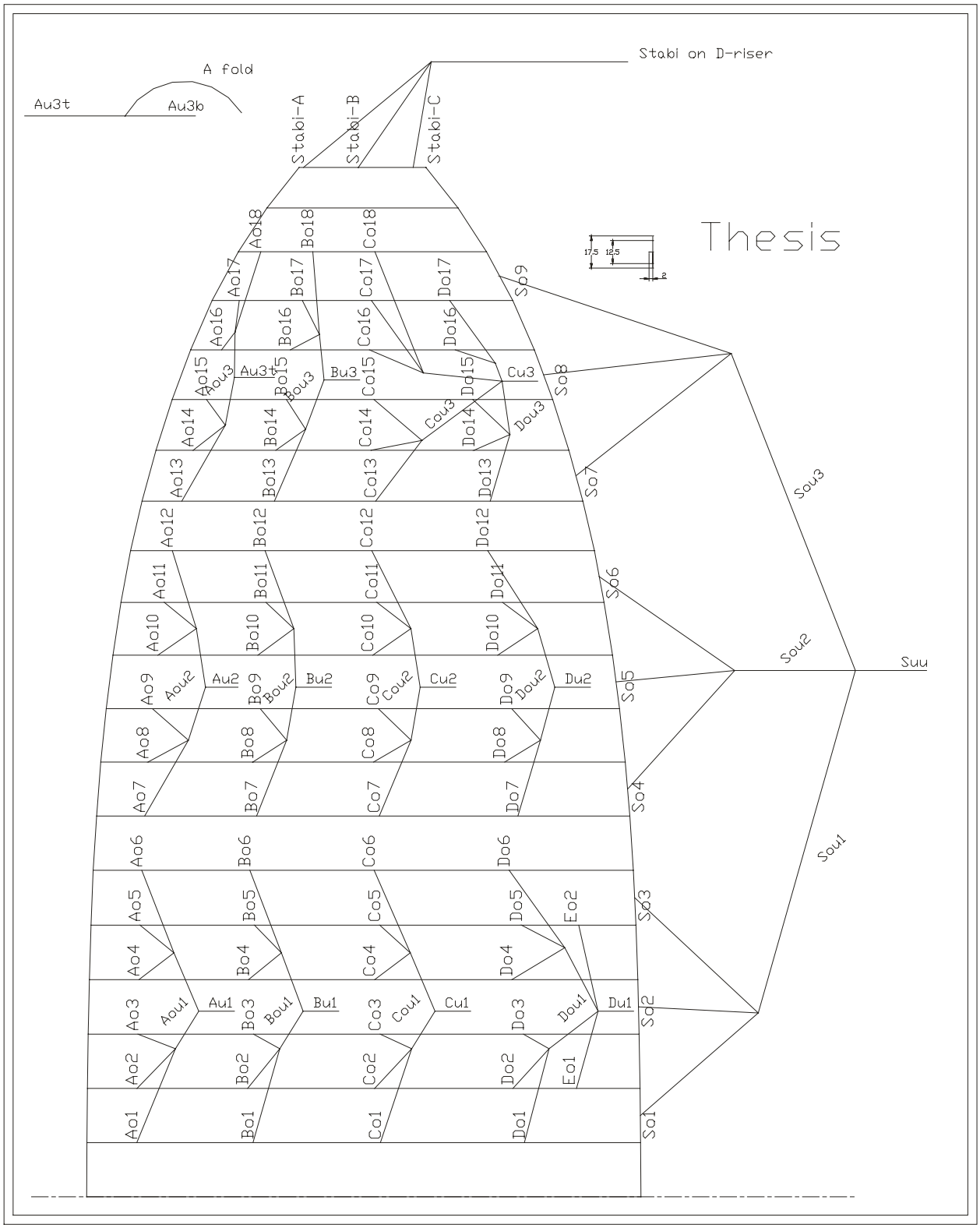
Signature of the pilot: .....

Confirmation of the dealer:

.....

LINE PLANS

(refers to all sizes)


Stabi on D-riser
A fold
Au3t
Au3b
Stabi-A
Stabi-B
Stabi-C
Thesis
17,5
12,5
Ao18 Bo18 Co18
Ao17 Bo17 Co17 Do17 So9
Ao16 Bo16 Co16 Do16
Ao15 Aou3 Au3 Bou3 Bu3 Co15 Dd15 Cu3 So8
Ao14 Bo14 Co14 Cou3 Do14 Dou3
Ao13 Bo13 Co13 Do13 So7 Sou3
Ao12 Bo12 Co12 Do12
Ao11 Bo11 Co11 Do11 So6
Ao10 Bo10 Co10 Do10 Sou2 Suu
Ao9 Aou2 Au2 Bo9 Bou2 Bu2 Co9 Cou2 Cu2 Do9 Dou2 Du2 So5
Ao8 Bo8 Co8 Do8
Ao7 Bo7 Co7 Do7 So4
Ao6 Bo6 Co6 Do6 Sou1
Ao5 Bo5 Co5 Do5 Eo2 So3
Ao4 Bo4 Co4 Do4
Ao3 Aou1 Au1 Bo3 Bou1 Bu1 Co3 Cou1 Cu1 Do3 Dou1 Du1 So2
Ao2 Bo2 Co2 Do2 Eo1
Ao1 Bo1 Co1 Do1 So1

changes reserved.